CROSS-COUNTRY DETERMINANTS OF BANK INCOME SMOOTHING BY MANAGING LOAN LOSS PROVISIONS

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Cross-country determinants of bank income smoothing by managing loan loss provisions

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Abstract

This paper studies the determinants of income smoothing by managing loan loss provisions in banks around the world. Using a panel database of 4,546 bank-year observations from 41 countries and controlling for unobservable bank effects and for the endogeneity of explanatory variables, we find that bank income smoothing with loan loss provisions varies across countries depending on institutions, regulation, supervision, financial structure and financial development. Results suggest that income smoothing decreases in line with investor protection, the extent of accounting disclosure, restrictions on bank activities and official and private supervision, while it increases with market-orientation and development of the financial system.

JEL classification: G34; G38; M41

Keywords: Income smoothing, loan loss provisions, bank regulation, bank supervision, institutions.

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1. Introduction

This paper analyzes how bank income smoothing by managing loan loss provisions varies across countries depending on political economy variables such us institutions, regulation, supervision, financial structure and financial development. Recent studies have highlighted the role of regulatory and institutional features in explaining international differences in the quality of financial statements. Ball et al. (2000) and Fan and Wong (2002) document significant international variation in the degree of asymmetric timelines of earnings with respect to bad news and good news, and explain these differences with reference to international features of the financial reporting environment. Basu et al. (1998) document significant country-level differences in earnings volatility and predictability, and associate such differences with variations in disclosure and accounting principles, including the extent of accrual accounting, the extent of the use of historical cost versus market or fair value accounting, and the degree of accounting choice. Leuz et al. (2003) provide comparative evidence on earnings management across countries, analyzing publicly traded commercial and industrial firms in 31 countries, and concluding that earnings management decreases with investor protection in the country because strong protection limits the insiders' ability to acquire private control benefits, which reduces their incentives to mask a firm's performance. Shen and Chich (2005) extend the international study of earnings management to the banking sector of 48 countries, confirming that stronger protection of investors and greater transparency in accounting disclosure reduce the incentives to manage earnings in banks.

There has been ever-increasing interest in pinpointing the influence of differences in national regulation and institutions on incentives to smooth out earnings in banking in particular, as it is one of the most regulated sectors and, furthermore, has a major impact on other sectors and on economic growth in general.[1] In view of such importance, this paper focuses on the banking industry and makes four basic contributions to previous studies. First, we use an international bank database to explicitly analyze the influence of bank regulation (restrictions on bank activities), official supervision, market discipline, financial structure and financial development on bank incentives to smooth out earnings, together with investor protection and the extent of accounting disclosure. Analysis of bank regulation and official supervision of bank income smoothing is important since much bank intervention is intended to increase the stability of the banking system and reduce the volatility of bank earnings (Greembaun and Thakor, 1985). It is reasonable to surmise, therefore, that the characteristics of regulation and supervision that target reducing bank risk will affect bank incentives to reduce the reported variability in earnings by "smoothing out" the fluctuations of their earnings

[1] See, among others Demirgüc-Kunt and Maksimovic (1998), Levine and Zervos (1998), Rajan and Zingales(1998) and Levine (2004).

record. In this paper, we argue that the more efficient bank regulation and supervision proves to be in limiting bank risk, the lower the incentives for bank managers to smooth bank earnings will also be.

Secondly, we focus on one of the most common purposes of earnings management: income smoothing, a practice aimed at reducing the variability of net profits over time by managing loan loss provisions. Although managers may employ a range of tools to limit earnings fluctuations, most of the empirical literature in banking has focused on how banks may smooth out their earnings by manipulating their loan-loss provisions, given the significant latitude in determining the amount of this accrual (Greenawalt and Sinkey, 1988; Ma, 1988; McNichols and Wilson, 1988; Wahlen, 1994; Beaver and Engel, 1996; Ahmed et al. 1999; Lobo and Yang, 2001). These studies model the behavior of loan loss provision as a function of bank earnings before loan loss provisions, other bank balance-sheet and income statement variables and of economic environment variables. A positive coefficient of the earnings variable indicates income smoothing with loan loss provisions, since it suggests that loan loss provisions are high when earnings are high and are low when bank earnings are low. Our paper extends this type of analysis to 41 countries, analyzing differences in income smoothing across countries and how political economy variables explain these differences.[2]

Thirdly, this paper compares differences in income smoothing with loan loss provisions between publicly traded and non-publicly traded banks. Although Beatty and Harris (1999) and Beatty et al. (2002) both claim that there are higher incentives to smooth earnings in publicly traded US banks, there is no empirical evidence on the differences in the use of loan loss provisions to smooth out earnings beyond the US; nor is there any empirical evidence on whether these differences are stable across countries. Finally, a fourth hallmark of our paper is the use of the GMM difference estimator to analyze the relation between loan loss provisions and bank earnings. This methodology has the advantage of controlling for individual bank effects that differ from those captured by explanatory variables, i.e. it controls for omitted variables, and also controls for the potential endogeneity of the explanatory variables.

Our empirical analysis consists of two stages. In the first stage, we test the income smoothing hypothesis for each country by using a panel database and applying the GMM difference estimator to control for bank specific effects not included in the regression and for the potential endogeneity of the explanatory variables. Loan loss provision is the dependent variable and the earnings before taxes and loan loss provision is the explanatory variable of interest here. As the income smoothing hypothesis

[2] There is also a bulk of studies comparing the ability of financial markets and intermediaries to share risk through intertemporal risk smoothing (Allen and Gale, 1994; 1996) and how financial intermediaries smooth loan rates against credit shocks (Berlin and Mester, 1999). However, our paper differs of this literature by analyzing the manager discretion to reduce the perceived risk by smoothing the bank income reported in financial statements.

suggests that bank managers make large loan loss provisions in good years so that extra reserves are available for bad years, a positive relationship between loan loss provisions and bank earnings is expected under this hypothesis. The other explanatory variables of loan loss provisions are those that are commonly used in the literature to test the income smoothing hypothesis. In the second stage, we test the influence of country variables on the intensity of bank income smoothing and run a regression in which the dependent variable is the earnings variable coefficient obtained for each country in the first stage. The explanatory variables of bank income smoothing in the second stage are the type of investor protection, accounting disclosure, regulation, supervision, financial structure and financial development of each country. The influence of these country aspects is also analyzed by incorporating an interaction term for each political economy aspect and the earnings variable. Our results are robust for different estimation techniques and for alternative proxies measuring legal and institutional factors.

The rest of the paper is structured in the following way. Section 2 analyzes the income smoothing hypothesis in each country. Expected differences in income smoothing between publicly and non-publicly traded banks and the characteristics of the database and methodology are described in this section. Section 3 describes the potential cross-country determinants of bank income smoothing and their forecasted influence. Section 4 reports the empirical results of the cross-country analysis. Finally, section 5 rounds off the paper by drawing a number of conclusions.

2. Testing income smoothing in each country

2.1. Theoretical background

The degree to which banks manage their earnings to smooth out their fluctuations has attracted the attentions of academics, investors and regulators alike. The literature puts forward a number of reasons for income smoothing practices. First, income smoothing improves the risk perception of a bank for its investors, regulators and supervisors. Barnea et al. (1975) and Ronen and Sadan (1981) consider smoothing to be a signaling device. Beaver et al. (1989), Wahlen (1994), Ahmed et al. (1999) apply this idea to banking firms and loan loss provisions decisions. Second, there may be tax incentives to smooth earnings (Rozycki, 1997). Third, managerial self-interest can explain income smoothing. For example, bank managers' compensation packages may encourage income smoothing behavior (Lambert, 1984). Bank managers may also derive incumbent rents from staying with the bank, which encourages a smooth performance record to minimize the chance of being fired (Fudenberg and Tirole, 1995). Fourth,

income smoothing may be the result of perceived bankruptcy concerns (Trueman and Titman, 1988). Fifth, earnings smoothing can be motivated by the desire to discourage investors from acquiring private information that could then be used to trade against uninformed shareholders selling for liquidity reasons (Goel and Thakor, 2003).

Empirical analysis comes, basically, from the USA and provides contrasting results about the income-smoothing hypothesis in banking. Based on data for individual US banks, Greenwald and Sinkey (1988), Wahlen (1994), Collins et al. (1995), Docking et al. (1997), and Lobo and Yang (2001) have found a positive relation between loan loss provisions and bank earnings, while Scheiner (1981), Wetmore and Brick (1994), Beatty et al. (1995) and Ahmed et al. (1999) do not find evidence of earnings smoothing. Based on aggregate data for European Union member countries, the European Central Bank (2002) finds that differentiated patterns prevail among EU countries but that there is a negative relationship between income and loan loss provisions for the group of EU member countries as a whole. In particular, Ma (1988) and Perez et al. (2004) came up with evidence in favor of the income smoothing hypothesis for, respectively, UK and Spanish banks.

Indirect empirical evidence of income smoothing with loan loss provisions in an international bank database is provided by Laeven and Majnoni (2003) and Bikker and Metzemakers (2005), who analyze the cyclical patterns of bank loan loss provisions. Both studies find that loan loss provisions have a pro-cyclical effect, as they are negatively related to GDP growth. However, this pro-cyclical behavior of loan loss provisions is partially mitigated by income smoothing practices, because income smoothing means that banks apply less provision (more) in downturns (upturns), when earnings are lower (higher) but when more (less) resources are needed for capital.[3] Both papers also observe that the pro-cyclical effect and income smoothing practices vary across regions. Laeven and Majnoni (2003) show that results vary across five regions (Europe, USA, Japan, Latin America and Asia), and Bikker and Metzemakers (2005) also find differences in their comparative study of 7 countries (USA, Japan, France, Italy, Luxembourg, Spain and UK). Neither study analyses the influence of regulation and of the quality of institutions on the observed differences across regions.

The existence of minimum regulatory capital requirements may provide banks with further industrial company-related reasons that explain a positive relation between earnings and loan loss provisions (Wall and Koch, 2000). The capital management hypothesis posits that a positive relation between loan loss provisions and earnings may arise when banks attempt to limit the cost of complying with minimum capital

[3] Both papers are counterpoints to the more traditional view that establishes negative connotations for income smoothing because it introduces judgmental modifications to a firm's earnings, which may ultimately damage shareholder value. Both papers see income smoothing as having a positive effect on the banking industry as it reduces the pro-cyclicality that underlies minimum capital regulatory requirements.

requirements. Empirical studies have tested the capital management hypothesis by considering whether the positive relation between loan loss provisions and bank earnings remains significant after including bank capital as an explanatory variable of loan loss provision. Results have been contradictory: Amed et al. (1999) and Lobo and Yang (2001) found evidence of the use of loan loss provisions to meet the requirements of regulatory capital for US banks; Shrieves and Dahl (2003) report a similar use by Japanese banks during a period of financial duress, 1989-1996, yet Perez et al. (2004) found no evidence consistent with the capital management hypothesis for Spanish banks.

A further interesting facet of bank incentives to smooth out earnings relates to whether there are differences between publicly and non-publicly traded banks. The literature has based its arguments on the exploitation of earnings management to improve firms' risk perceptions by its investors to forecast greater income smoothing for publicly traded firms. As publicly traded firms have more outsiders, the signaling effect of announcements of earnings and the relevance of financial statements is greater in these firms (Beatty and Harris, 1999; Beatty et al. 2002). In contrast to publicly held firms, ownership of privately held firms is concentrated and their shareholders have a relatively low marginal cost of acquiring and disseminating information, reaping a large share of the benefits. Moreover, shares of private companies are rarely traded, leaving private shareholders with little incentive to incessantly assess firms' values. As a result, private investors are likely to use a fairly rich information set, rather than relying on simple earnings-based heuristics. [4]

Together with greater signaling effects, explanations of income smoothing based on managerial self-interest (Lambert, 1984; Fudenberg and Tirole, 1995) and on the reduction of the potential loss that uninformed shareholders face when they trade for liquidity reasons (Goel and Thakor, 2003) would also forecast more incentives for income smoothing within publicly traded firms. Consistent with these arguments, Beatty et al. (2002) show that private banks in the USA are less likely than public banks to manage earnings and report more small declines in earnings, fewer small increases in earnings, and shorter strings of consecutive earnings increases. However, we are unaware of any study that analyzes the differences in income smoothing with loan loss provisions between publicly and non-publicly traded banks beyond the USA.

Unlike industrial and commercial firms, the arrival of supervisors on the banking scene as new users of financial statements boosts incentives for non-publicly traded banks to

[4] Evidence in Bhattacharya (2001) suggests that at least one segment of the public market (small trades in small publicly held firms) relies on a simple earnings-based benchmark and Fan and Wong (2002) showed that ownership concentration in East Asia is associated with low earnings informativeness.

smooth their earnings in order to clear the hurdle of supervisor-imposed risk controls. Financial statements of non-publicly traded banks may well be more relevant for supervisors than those of publicly traded banks. If supervisors focus their efforts on the big banks because of their more marked ill effects of a banking crisis in this sector, then they would presumably have more information about these banks, as well as more capacity to clearly perceive the effects of accounting practices on results. This would make income smoothing in publicly traded banks a more unlikely prospect. In contrast, lower benefits for supervisors auditing financial statements of small banks would increase opportunities for these banks to reduce the risk perceived by the supervisors by smoothing the reported earnings by managing loan loss provisions. Thus, the introduction of the supervisor as a new user of financial statements in banking lends itself to arguments in favor of assuming greater income smoothing practices in publicly than in non-publicly traded banks; in the process, analysis becomes an empirical issue, where banks' reactions may differ from those seen in the industrial sector.

Using the above literature as a basis, we will now contrast the income smoothing hypothesis with loan loss provisions in 41 countries and the differences in income smoothing practices between publicly and non-publicly traded banks across countries.

2.2 Methodology and data

Bank balance sheet and income statement information were obtained from the Fitch-IBCA Ltd. Bankscope Database for the period 1995-2002. Consolidated data were used whenever available and data are obtained in US dollars and in real prices. We obtained information for banks from 41 countries. Our starting point was the 49 countries included in the La Porta et al. (1998) Database for whom information about the legal characteristics and investor protection was available. Indonesia was then dropped from the sample as no information on bank regulation was available in the World Bank Bank Regulation and Supervision Database. Taiwan was also eliminated as there was no information about its macroeconomic variables in the International Financial Statistics of the IMF. Finally, Austria, Belgium, Finland, India, Netherlands and Zimbabwe were also excluded for lacking sufficient information in their bank balance sheet and income statements for our methodology to be applied.

Given the mixed results obtained for US banks when the income-smoothing hypothesis was tested, applying the right methodology is essential. This paper exploits the availability of a panel database to control for unobservable individual effects on banks whilst also controlling for the endogeneity of the explanatory variables by using the generalized method of moments (GMM). Moreover, the GMM allows a dynamic model of loan loss provisions to be estimated by introducing lags of the dependent variable. Amongst recent empirical studies, only Laeven and Majnoni (2003) in an bank

international sample and Pérez et al. (2004) for Spanish banks use techniques similar to those applied in this study; Lobo and Yang (2001) also use a panel database but fail to control for the potential endogeneity of the explanatory variables. Similarly, other studies do not control simultaneously for unobservable heterogeneity across banks and for the endogeneity of the explanatory variables.

The explanatory variables of loan loss provisions are those that are traditionally used for the income smoothing hypothesis (see, for example, Greenwald and Sinkey, 1988; Lobo and Yang, 2001) and we incorporate additional variables to those employed in an international bank sample to analyze the procyclicality of bank provisioning behavior. In contrast to Laeven and Majnoni (2003) we include bank capital to test the capital management hypothesis, and country dummies to control for differences in the level of loan loss provisions across countries. In contrast to both Laeven and Majnoni (2003) and Bikker and Metzemakers (2005), we include the loan loss reserve to control for non-discretionary components of loan loss provisions. The model estimated is:

$$\left(\frac{LLP_{i,t}}{A_{i,t-1}}\right) = \beta_0 + \beta_1\left(\frac{LLP_{i,t-1}}{A_{i,t-2}}\right) + \beta_2\left(\frac{LLP_{i,t-2}}{A_{i,t-3}}\right) + \beta_3\left(\frac{\mathrm{EBT}_{i,t}}{\mathrm{A}_{i,t-1}}\right) + \beta_4\left(\frac{\mathrm{CLOANS}_{i,t}}{\mathrm{A}_{i,t-1}}\right) + \beta_5\left(\frac{\mathrm{LLA}_{i,t-1}}{\mathrm{A}_{i,t-1}}\right) +$$
$$+ \beta_6\left(\frac{\mathrm{CAP}_{i,t}}{\mathrm{RWA}_{i,t}}\right) + \beta_7\, GDPGR + \beta_8 \sum_{j=1}^{41} Country_j + \beta_9 \sum_{t=1995}^{2002} \mathrm{T}_t + \nu_i + \varepsilon_{it} \qquad [1]$$

where $\mathrm{LLP}_{i,t}$ is the loan loss provisions of bank i at year t. $\mathrm{EBT}_{i,t}$ is the earnings before taxes and loan loss provision of bank i at year t. $\mathrm{CLOANS}_{i,t}$ is the change of total loans outstanding of bank i in year t, estimated as the difference of total bank loans between year t and year t-1. $\mathrm{LLA}_{i,t-1}$ is the beginning balance of the total allowance for loan losses of bank i. All these variables are normalized by the total bank assets at the beginning of year t ($\mathrm{A}_{i,t-1}$) to mitigate potential estimation problems with heteroskedasticity. $\mathrm{CAP}_{i,t}$ is the capital of bank i at year t, which is normalized by the risk-weighted assets at year t ($\mathrm{RWA}_{i,t}$). $GDPGR_{i,t}$ is the annual growth in year t of real per capita GDP in the country of bank i. $\sum_{j=1}^{41} \mathrm{Country}_j$ is a set of country dummy variables controlling for specific differences in the level of loan loss provisions across countries. $\sum_{t=1995}^{2002} \mathrm{T}_t$ is a set of dummy time variables. These dummies capture any unobserved bank-invariant time effects not included in the regression. Finally, ν_i are unobservable bank specific effects that are constant over time but vary from institution to institution, and ε_{it} is the white-noise error term.

Earnings before taxes and loan loss provision ($EBT_{i,t}/A_{i,t-1}$) are the most interesting variable in our study as they measure income smoothing behavior; the higher their positive coefficient, the greater income smoothing will be. The lags of the dependent variables ($LLP_{i,t-1}$ and $LLP_{i,t-2}$) capture adjustment costs that curb complete adjustment to an equilibrium level. We include the first and the second lag to take into account a change in the speed of adjustment beyond the first year. The advantage of this formulation is that it provides a better approximation of the potential impact of stock variables on loan loss provisions at time t, captured via the lagged values. We expect positive coefficients for the lags of the dependent variable.

Change in the total loans outstanding ($CLOANS_{i,t}$) and the beginning balance of total allowance for loan loss ($LLA_{i,t-1}$) control for non-discretionary components of loan loss provisions, since these variables are related to changes in default risk. Given that $LLP_{i,t}$ is an expense for a specific accounting period rather than a stock at a point in time, it is appropriate to include the change in the total loans outstanding as a factor in determining the LLP level. An increase in the ratio of total loans to total assets may have its origin in a more aggressive bank's loan policy and/or in an increase of the aggregated demand for credit. Both origins are associated with higher default risk because Berger and Udell (2003), Crocket (2001) and Rajan (1994) provide evidence that during expansions bank managers implement more liberal credit policies with lower credit standards requirements. For these reasons, we predict a positive sign for CLOANS.

The beginning balance of the total allowance for loan loss ($LLA_{i,t-1}$) results from past accumulations of LLP and serves as an inventory in setting the current LLP level. Wahlen (1994) notes that investors are likely to use past provisions in forming expectations of future provisions and future charge-offs. We predict a positive sign for the coefficient of LLA.

The bank capital normalized by the risk-weighted assets ($CAP_{i,t}/RWA_{i,t}$) is introduced to capture the intensity of the use of loan loss provisions to manage capital or to achieve regulatory capital targets (capital management hypothesis). The expected relationship between LLP and regulatory capital is not clear in our period of analysis, when Basel I was in force. In Basel I, as loan loss reserves were not included in TIER I capital, an increase in loan loss provisions decreased Tier I capital by the after-tax amount of the provisions. However, since loan loss reserves counted as Tier II capital up to 1.25% of risk-weighted assets, a dollar increase in loan loss provisions increased total capital by the tax rate times one dollar (provided loan loss reserves do not exceed the upper bond). Thus, increasing loan loss provision had opposing effects on Tier I and Tier II capital and the sign of the relation between loan loss provisions and capital under Basel I depends on the relative amounts of Tier I and Tier II capital. Moreover, countries brought in different, targeted approaches for loan loss reserves in the definition of

regulatory capital; in consequence, no relation between CAP and LLP can be forecasted for the set of countries, given that there may be differences in this relation across countries, depending on national legislation. [5]

The growth of real per capita GDP is included to control for the documented procyclical effect of provisioning. The common view is that an economic upswing and rising incomes indicate improving conditions for firms and reduce the likelihood of loan defaults, whereas a recession will have the opposite effect. Banks are expected to reflect this feature in their decisions by lowering provisions during an economic boom and increasing them during a downturn. According to this cyclical behavior, reported by Laeven and Majnoni (2003) and Bikker and Metzemakers (2005), we forecast a negative coefficient for the growth of real per capita GDP in the loan loss provision equation.

We estimate model (1) using the GMM difference estimator of Arellano and Bond (1991). The GMM estimator is especially designed to obtain unbiased and efficient estimates in dynamic models with lagged endogenous variables as regressors because it allows the problems originated by unobservable heterogeneity and endogeneity to be avoided. In fact, because banks are heterogeneous there are always characteristics influencing loan loss provisions which are difficult to measure or hard to obtain, and which do not enter our models. Failure to control for such heterogeneity runs the risk of obtaining biased results in view of the correlation between the error term and some of the explanatory variables. Unlike cross-sectional analysis, the panel data methodology has the great advantage of allowing unobservable heterogeneity through an individual effect (μ_i) to be controlled for. The GMM estimator eliminates individual effects and provides unbiased estimates by taking first differences of variables.

Moreover, the potential endogeneity of some explanatory variables (EBT, CLOANS, LLA and CAP) in model (1) could seriously affect the estimation results. In fact, there is extensive theoretical and empirical research showing that bank performance, credit and capital are endogenous variables. Therefore, if we ignore the endogeneity issue, we will obtain a spurious correlation between loan loss provisions and the right-hand side variables. The GMM controls for problems of endogeneity by using instruments. In particular, for EBT, CLOANS, LLA and CAP, we use two to four period lags of the same variables. These lags have been chosen to avoid correlation with the error term ε_{it} while minimizing, at the same time, the number of observations lost. The growth of per capita GDP, the country and the time dummy variables were the only variables considered exogenous.

[5] For instance, Shrieves and Dahl (2003) and Perez et al. (2004) show the existence of differences in the treatment of loan loss provisions in the definition of regulatory capital between Japan, Spain and USA. We nevertheless introduced TIER I instead of TIER II in our regressions. Fewer observations and non-variation of results with respect to those obtained with TIER II led us to decide not to present these results.

To check for potential misspecification of the models, we use the m_2 statistic, which tests for lack of second-order serial correlation in the first difference residuals. In our models, this hypothesis of second-order serial correlation is always rejected. Although there is first-order serial correlation (m_1) in the differentiated residuals, it is due to the first difference of models. Another specification test used is Sargan's statistic of over-identifying restrictions, which confirms the absence of correlation between the instruments and the error term in the models.

Descriptive statistics and correlations of our bank sample are reported in Table 1. Correlations in Panel B show that on average loan loss provisions correlate positively with bank earnings, the change in the total loans outstanding and the beginning balance of total allowance for loan loss.

2.3. Results

The income smoothing hypothesis was first tested on the complete sample of banks. Results of estimating model (1) using GMM are reported in the first column of Table 2. In order to eliminate possible bias that might creep in as a result of there being more observations available for US banks, column 2 shows results when these banks are left out of the sample. The test of adequacy of instruments (Sargan test) and of the autocorrelation of second order in the residuals (m_2) are satisfactory in all the estimations.

Our results mirror those reported by Laeven and Majnoni (2003) and Bikker and Metzemakers (2005) insofar as highlighting income smoothing in this international bank sample, as EBT has positive, statistically significant coefficients at the 1% level in both the estimations. This result is also of economic significance. For instance, using the coefficient of EBT in column 1, a standard deviation increase in the percentage of bank earnings over lagged assets (equivalent to an increase of 0.054) would originate an increase in the loan loss provisions over lagged assets that represents 1.5 times their standard deviation (equivalent to an increase of 0.080).

Coefficients for the remaining variables are as expected. The two lags of the dependent variable have positive coefficients, indicating that adjustment of loan loss provisions to the equilibrium level in each year is partial and, therefore, that a dynamic specification to model bank provisioning behavior is recommendable. The proxy variables of the non-discretionary components of loan loss provisions (CLOANS and LLA) have the expected positive coefficients. Growth of real per capita GDP has negative coefficients, confirming the procyclical effect of loan loss provisions.

The influence of the above-mentioned variables (lags of the dependent variable, EBT, CLOANS, LLA and GDP growth) does not vary depending on whether US banks are

included or not. However, the influence of bank capital on loan loss provisions changes when US banks are excluded from the sample. CAP has a negative coefficient for the complete sample but a positive one in column 2 when USA banks are dropped. This change indicates that different definitions of regulatory capital can indeed provoke a different relation between loan loss provisions and bank capital across countries.

In order to compare the income smoothing behavior of publicly and non-publicly traded banks, we incorporate into the estimations an interaction term of the earning variable (EBT) and a dummy variable that takes 1 if the bank was publicly traded and 0 otherwise (PT). Columns 3 and 4 show the results, which vary when US banks are omitted, since in column 3 the coefficient of the interaction term (PTxEBT) is negative whereas it is non significant in column 4 when USA banks are left out of the sample. This change in the sign of the PTxEBT coefficient indicates that differences in income smoothing between publicly and non-publicly traded banks are not constant across countries. To be precise, PTxEBT has a negative coefficient for US banks, whereas on average it has a non significant one for the remaining countries. Such change in the coefficients of PTxEBT highlights the potential bias when estimating the income smoothing hypothesis with international bank data that fails to control for national variables, which provoke differences across countries in the incentives to smooth out bank earnings. Similarly, the results commend separate estimations per country when analyzing income smoothing and the stability of potential differences between publicly and non-publicly traded banks.[6] All other variables in columns 3 and 4 have coefficients that reflect those in columns 1 and 2.

In order to analyze differences in income smoothing across countries and pinpoint the bias of estimations that fail to control for country variables that affect income smoothing, we replicated our initial analysis separately for each country. To do this, we estimated regression (1) without country dummies for each of the countries in the sample. Column 1 of Table 3 provides the EBT variable coefficients per country. These coefficients are a measure of bank income smoothing in each country. Column 2 shows the coefficients of the PTxEBT interaction variable for each country when this interaction term is added to regression (1). These coefficients are a measure of differences in income smoothing between publicly and non-publicly traded banks in the respective country. Since some countries have a limited number of publicly traded banks, this coefficient cannot be calculated for every country.

Our results confirm that there are different patterns of income smoothing across countries. The positive relation we obtained between loan loss provisions and bank

[6] Note that country dummies control for differences in the level of loan loss provisions but not for a different relation between earnings and loan loss provisions across countries.

earnings in 14 countries (Brazil, Chile, Denmark, Egypt, Italy, Kenya, Korea, Peru, Philippines, Portugal, Spain, Sweden, USA and Venezuela) is consistent with the income smoothing hypothesis. In Chile, Kenya and Spain, income smoothing is only detected in publicly traded banks but not in non-publicly traded banks. Such evidence in favor of the income smoothing hypothesis also indicates that in these countries, loan loss provisions mitigate the procyclical effect of minimum regulatory capital requirements. In 6 countries (Colombia, Greece, Malaysia, Pakistan, Thailand and United Kingdom) results contradicted the income smoothing hypothesis, with negatively related LLP and EBT. No statistically significant LLP-EBT relation was observed for the remaining 19 countries.

On the question of differences in income smoothing between publicly and non-publicly traded banks, our results indicate that publicly traded banks engage in the practice more than their non-publicly traded counterparts in 8 countries (Chile, Colombia, Egypt, Kenya, Peru, Portugal, Spain and Thailand). In contrast, in Greece, Italy and USA, publicly traded smooth less than non-publicly traded banks. This difference across countries suggests that a higher number of external users of publicly traded banks' financial statements fails to fully explain differences between publicly traded and non-publicly traded banks. Country variables such as investor protection, the power of official supervision, market discipline, restrictions on bank activities, financial structure and financial development may affect publicly and non-publicly traded banks differently in each country and obviate a common behavior pattern.

To sum up, differences in income smoothing with loan loss provisions across countries highlights the fact that the results obtained from the full sample only reflect average behavior, which then varies across countries. There are two immediate consequences of this: first, it underlines the relevance of studying national aspects that affect bank incentives to smooth out earnings and, second, it points to the bias of estimations to test the income smoothing hypothesis with international data that fail to control for national variables influencing bank managers' incentives to smooth out earnings in each country.

3. Determinants of income-smoothing across countries

This section analyzes potential country determinants of differences across countries in bank income smoothing with loan loss provisions observed in our sample. Differences in investor protection and legal aspects, transparency in accounting disclosure, bank regulation and supervision, financial structure and financial development are all taken into account. The reason for, and the forecasted influence of, each of these variables on

bank income smoothing are then described, as also are the proxies used to measure each of them and the sources they came from. The definition of all the country variables is summarized in appendix A and their values in each country and correlations are reported in Table 4.

a) Indicators of investor protection

Investor protection is defined as the power to expropriate minority shareholders and creditors within the constraints imposed by the law (La Porta et al. 2002). Following this definition, we use three variables drawn from La Porta et al. (1997, 1998): rights of minority shareholders (ANTIDIRECTOR), creditor rights (CREDITOR) and legal enforcement (LEGAL).

How strongly the legal system favors minority shareholders against managers or dominant shareholders in the corporate decision-making process, including the voting process, is measured with the ANTIDIRECTOR variable. This variable ranges from 0 to 6, with a higher value indicating stronger minority shareholders' protection. CREDITOR measures a borrower country's overall creditor rights. This variable ranges from 0 to 5, with a higher value indicating stronger creditor rights or stronger protection against borrower expropriation. Given that investor protection depends not only on legally established rights but also on such rights actually being enforced, we have incorporated a measure of legal enforcement in each country (LEGAL) to complement ANTIDIRECTOR and CREDITOR. Following Leuz et al. (2003) and Shen and Chich (2005), legal enforcement (LEGAL) is measured as the mean score across three legal variables used in La Porta et al. (1998): (1) the efficiency of the judicial system, (2) the index of rule of law, and (3) the corruption index. All three variables range from 0 to 10, with a higher average score indicating stronger legal enforcement.[7]

Leuz et al. (2003) have shown the relevance of investor protection in explaining differences across countries in earnings management of commercial and industrial firms. They conclude that earnings management is more pervasive in countries where the legal protection of minority shareholders and legal enforcement are weak, because in these countries insiders enjoy greater private control benefits and hence have stronger incentives to obfuscate bank performance. In banking, there are additional arguments to

[7] We also checked the robustness of results by including alternative measures of the quality of the legal and institutional environment that are used in other papers as the indicator of the quality of institutional development in the country for 1998, calculated by Kaufman et al. (2001) as the average of six indicators: voice and accountability, political stability, government effectiveness, regulatory quality, rule of law, and control of corruption. Results were not significantly different to those reported in the paper using the index of legal enforcement.

forecast a negative influence of investor protection on income smoothing, as Demirgüc-Kunt and Detragiacche (2002), Demirgüc-Kunt and Kane (2002) and Laeven (2002) have shown that a sound legal system with proper enforcement of rules reduces the adverse effects on bank risk-taking originated by deposit insurance. This lower risk-taking in countries with strong institutional environments would also reduce bank incentives to smooth out benefits which are stable *per se*. Shen and Chich (2005) confirm the negative relation in banking between the rights of the minority shareholders and earnings management, but do not find a negative influence for the quality of legal enforcement. Following the above arguments, we expect negative coefficients for ANTIDIRECTOR and LEGAL in the equation explaining income smoothing by managing loan loss provisions.

Although previous studies have not analyzed the influence of creditor rights on income smoothing we predict a negative coefficient for CREDITOR, since stronger creditor rights against borrower expropriation would reduce the risk of banks in the lending activity and, therefore, banks' incentives to smooth earnings.

b) Indicators of accounting quality

We used the accounting disclosure index (DISCLOSURE) from La Porta et al. (1998) as our accounting quality indicator. This index measures the inclusion or omission of 90 items in the 1990 annual reports. We forecast that a poor accounting system will increase bank income smoothing for two reasons. First, the less detailed financial statements are, the greater the opportunity to smooth profits reported to investors and supervisors. Second, a poor accounting system that makes it difficult for bank lenders to assess the total risk of borrowers will increase the problem of asymmetric information between them and, in short, will increase bank risk. Greater risk would increase incentives to smooth out earnings. Therefore, we expect a negative coefficient for DISCLOSURE.

c) Indicators of bank regulation

The characteristics of bank regulation in each country are incorporated into the analysis with a measure of the breadth of activities that banks are allowed into. We use the measure of regulatory restrictions on non-traditional bank activities (RESTRICT), available in the World Bank Bank Regulation and Supervision Database developed by

Barth et al. (2001). This variable indicates whether bank activities in securities, insurance and real estate markets, and bank ownership and control of non-financial firms are (1) unrestricted, (2) permitted, (3) restricted, or (4) prohibited. This indicator ranges from 4 to 16, with higher values indicating more restrictions on bank activities and non-financial ownership and control.

We do not predict a clear effect for RESTRICT. On the one hand, tighter regulations on bank activities reduce opportunities for taking risk and bank competition (Claessens and Laeven, 2004). A reduction in bank competition also diminishes risk-taking incentives in order to preserve the higher charter value of banks associated to less competitive markets (Keeley, 1990). These arguments lead to incentives for income smoothing being lower, the tighter the regulations on bank activities. On the other hand, tighter limitations on bank activities may reduce opportunities for smoothing out earnings through other discretionary components of bank income such as security gains/losses (Beatty et al. 1995; Shrieves and Dahl, 2003). The fact that there are fewer alternatives for smoothing out earnings may mean that loan loss provisions are applied more often to this end, in which case, tighter regulations on bank activities would be positively related to bank income smoothing by managing such provisions.

d) Indicators of bank supervision

The influence of supervision is explicitly incorporated into the analysis using the World Bank Bank Regulation and Supervision Database variables to measure both official supervision and the extent of private monitoring.

Official supervisory power (OFFICIAL) in each country is measured by adding a value of one for each affirmative response to 14 questions on the power of supervisors to take prompt corrective action, to restructure and reorganize troubled banks and to declare a deeply troubled bank insolvent. This variable may range from 0 to 14, with a higher value indicating more power of supervisors. If greater powers of supervisors to intervene in banks discipline bank managers and reduce their incentives to undertake risk, they will also reduce managers' incentives to use loan loss provisions to smooth benefits that are not highly volatile. For this reason, a negative influence of OFFICIAL on bank income smoothing is forecast.

A private monitoring index (MONITOR) is included along with official supervision in order to capture the influence of market supervision. This variable increases by a value of one for each of the following characteristics for a country: 1) if an outside licensed audit is required of the financial statements issued by banks; such an audit would

presumably indicate the presence or absence of an independent assessment of the accuracy of financial information released to the public; 2) if the income statement includes accrued or unpaid interest or principal on non-performing loans and when banks are required to produce consolidated financial statements; 3) if off-balance sheet items are disclosed to the public; 4) if banks must disclose risk management procedures to the public; 5) if subordinated debt is allowable (required) as a part of regulatory capital, and finally 6) the percentage of the top 10 banks that are rated by international credit-rating agencies (the greater the percentage, the more the public may be aware of the overall condition of the banking industry as viewed by an independent third party). This variable therefore ranges from 0 to 6, with higher values indicating greater private oversight. As the opportunities for banks to smooth out their earnings fall in line with increased private monitoring, we forecast a negative influence of MONITOR on bank income smoothing.

e) Indicators of financial structure

The influence of financial structure on income smoothing is incorporated by analyzing the comparative importance of stock markets and banks in the country. We use the structure-aggregate variable (STRUCT) described by Beck and Levine (2002) and defined as the first principal component of two variables that measure the comparative activity and size of markets and banks. Each of the underlying components is constructed so that higher values indicate more market-based financial systems. The data to calculate this variable come from the Beck et al. (2003) database.

The relationship between financial structure and bank income smoothing may have a number of root causes. Greater bank ownership dispersion in market-oriented financial systems (La Porta et al., 1999, 2002) may boost incentives for bank managers to smooth out earnings, as the greater number of users of financial statements boosts the relevance of accountancy figures and the incentives for managers to influence external perception of the bank's solvency by managing loan loss provisions. This argument predicts a positive influence of STRUCT on bank income smoothing. The opposite prediction could be made if financial structure were considered an endogenous variable. The empirical literature has demonstrated that market-oriented financial systems are more likely to be found in high quality institutional environments with strong investor protection and good enforceability of contracts (Rajan and Zingales, 1998; La Porta et al. 1997, 1998). Considered in this light, financial structure, like investor protection, ought to be negatively related to income smoothing; furthermore, this negative relationship should disappear when the potential endogeneity of financial structure is controlled for.

f) Indicators of financial development

We follow Levine and Zervos (1998), Levine et al. (2000) and Beck and Levine (2002) in using the Finance-Aggregate index (FINAN) to gauge the extent of a country's financial development. This index equals the first principal component of two variables that measure the overall activity and size of financial intermediaries and markets, with higher values indicating a more developed financial system. The data to calculate this variable come from the Beck et al. (2003) database.

As was also the case with financial structure, we are unable to predict a clear influence of financial development on bank income smoothing. A greater dispersion of ownership in more financially developed countries boosts the number of users of financial statements and bank managers' incentives to improve outside perception of a bank's solvency by using income smoothing. On the other hand, if we assume that financial development is an endogenous variable that increases with a more market-orientation of the financial system and strong investor protection (Levine, 1998, 1999) we would forecast the same negative influence on bank income smoothing for FINAN as we did for investor protection. Nevertheless, the negative influence of FINAN should disappear when its endogeneity is controlled for.

Discussion of the influence of financial structure and development highlights that the main stumbling block for an analysis that includes several political economy variables relates to separating out each of their effects and correlated outcomes. Correlations between political economy variables in our sample (Panel B of Table 4) corroborate the positive relations documented in the literature between LEGAL, STRUCT and FINAN. Correlations also reveal that these three aspects correlate positively with the quality of the accounting system (DISCLOSURE). Such interrelations and the potential endogeneity of political economy variables make it difficult to tease out the specific effect of each variable and to know which of them plays the major role in bank income smoothing when empirical analysis is attempted. We use a number of instruments, which are described in detail in the next section, in order to avoid these simultaneity bias and correlation problems among country variables.

4. Results of cross-country determinants

4.1. GMM Estimations

To test the influence of country variables on bank income smoothing we incorporate sequentially an interaction term for each country variable and the earnings variable into

equation (1).Thus, the coefficient of each interaction term measures the influence of the respective political economy variable on bank income smoothing. Instead of using the observed values of each country variable we use instruments for them in order to identify the exogenous component of each political economy variable and control for potential simultaneity bias. The paucity of instruments, the extensive number of country variables and the need to use interaction terms with the earning variable point to the wisdom of incorporating each of the coefficients separately rather than incorporating the interaction terms of all country variables at the same time. A similar sequential procedure was also used by Barth et al. (2004) to analyze the influence of regulatory and supervisory practices on bank development.

The instruments of country variables are defined following Levine (1999) and Leuz et al. (2003). These are the country's real GDP averaged from 1980 to 1989, and three binary variables indicating an English, German, French or Scandinavian legal origin based on the classification of La Porta et al. (1998). Results using the GMM difference estimator with country and time dummy variables are reported in Tables 5 and 6. We report results excluding U.S. banks to avoid the potential bias caused by the large percentage (29%) that they represent in our sample and by the fact that Bankscope database does not include a very representative sample for the US banks.

Table 5 shows that legal variables measuring investor protection have the expected negative influence on bank income smoothing, as the EBTxLEGAL, EBTxANTIDIRECTOR and EBTxCREDITOR coefficients are negative. Moreover, as real protection of shareholders and creditors not only depends on legally established rights but also on their enforcement, LEGAL may be defined as a complement of ANTIDIRECTOR and CREDITOR. To test this complementary effect, we interact LEGAL with ANTIDIRECTOR and CREDITOR respectively in columns 4 and 5. The negative coefficients of both interaction terms confirm the complementary nature of legal enforcement and indicate that the reduction of bank income smoothing in accordance with stronger investor protection is greater, the greater the degree of law enforcement. These results are consistent with Leuz et al. (2003), which analyzed the earnings management activity in non-financial firms in 31 countries.

The positive coefficients of LEGAL and ANTIDIRECTOR indicate that greater minority shareholder protection and legal enforcement have a positive effect on the amount of loan loss provisions. The other variables have similar coefficients to those in Table 2.

Table 6 shows that higher quality of accounting disclosure, stricter regulations on bank activities, higher power of official supervision and higher private monitoring reduce the use of loan loss provisions to smooth earnings. The negative influence of these four

variables coincides with our forecasts. The negative coefficient of EBTxDISCLOSURE suggests that stringent accounting disclosure requirements are effective at improving the reliability of financial reports and reducing income smoothing practices. The negative coefficients of EBTxOFFICIAL and EBTxMONITOR are consistent with the efficiency of official and private supervision in reducing bank risk and, thereby cutting incentives for managers to smooth income in order to reduce the volatility of bank income that is, per se, stable. Finally, although we had forecasted contradictory effects for RESTRICT, its negative influence indicates that the lower risks of banks that target the credit and deposit markets reduces incentives to smooth earnings. Furthermore, this effect is greater than the effect of substitute accruals reduction, such as capital gains and losses, when banks are unable to operate in the securities, insurance and real state markets.

In contrast, the positive coefficients of EBTxSTRUCT and EBTxFINAN indicate that a greater market orientation and development of the financial system increases bank income smoothing. The higher income smoothing in market-oriented and more developed financial systems is consistent with higher incentives for bank managers to report more stable profits, the greater the number of external users of financial statements. Furthermore, this effect is more powerful than the reduction of income smoothing incentives caused by the stronger investor protection of market-oriented and more developed financial systems.

4.2. OLS estimations

We also applied a two-stage procedure to estimate the influence of institutional and regulatory variables on bank income smoothing as a robustness test of our results. The measure of income smoothing for each country obtained with model (1) and reported in column 1 of Table 3 is used as the dependent variable in an OLS regression. The institutional and regulatory variables are the explanatory variables in this regression. Unlike the GMM estimation reported above, this second stage regression uses only one observation per country. Nevertheless, it separates the effects of country variables by incorporating several of these variables as explanatory variables of bank income smoothing. However, as legal enforcement, accounting disclosure, market orientation and development of the financial system are highly correlated, they were not incorporated simultaneously as explanatory variables. Results of regressions are reported in Table 7.

The results of different specifications coincide in indicating the negative influence of restrictions on bank activities (RESTRICT) and of private monitoring (MONITOR) on bank income smoothing. This result is consistent with the negative influence of these two factors, as highlighted by our GMM estimations, and are confirmed in OLS

estimations as the main determinants of differences in bank income smoothing across countries. The enforcement of legal contracts and related variables such as the quality of the accounting system, market orientation and development of the financial system are not shown to be relevant variables in explaining cross-country differences in bank income smoothing in the OLS country estimations.

4.3. Additional robustness checks

Additional tests were carried out to check the robustness of our results. First, following Greenawalt and Sinkey (1988), estimations were replicated using operating earnings before loan loss provisions as an alternative measure of bank earnings. Results do not vary from those reported for earnings before taxes and loan loss provisions. Moreover, we included non-performing loans as an additional explanatory variable of loan loss provision in model (1). This variable affects the non-discretionary components of loan loss provisions and for most countries enters into results in regressions with positive, statistically significant coefficients. However, a relative lack of information on non-performing loans in the BankScope database reduced the number of countries we could run the GMM estimator on, and including non-performing loans did not change the results obtained for our measure of income smoothing in each country (the coefficient of the earnings variable). For these reasons, non-performing loans are not included as explanatory variables of loan loss provisions in the reported results.

We also checked the robustness of our results by applying random effect estimations instead of Arellano and Bond's (1991) GMM difference estimator. A random effect estimation does not control for the potential endogeneity of explanatory variables of loan loss provisions or for adjustment costs, since the lags of the dependent variable cannot be incorporated. However, it has the advantage of employing more observations and of also controlling for unobservable heterogeneity. Particular attention was given to countries for which there were few observations in the GMM estimations when we compared the results of both types of estimation i.e., Canada, Germany, Jordan, Sri Lanka, Sweden, Turkey and Uruguay. The significance of the country determinants of bank income smoothing does not vary with respect to that of the GMM estimations.

Additionally, we controlled for the influence of macroeconomic variables on bank income smoothing. Demirgüc-Kunt and Huizinga (2001) and Demirgüc-Kunt et al. (2004), among others, provide the basis for the macroeconomic variables that may affect bank risk and which might therefore also affect incentives to smooth out earnings. Variables included are inflation rate, annual growth of loans and the growth of GDP. Although we controlled in equation (1) for the influence of all these variables in provisioning behavior, we also checked whether these variables affect incentives to smooth out earnings, i.e., the relation between loan loss provisions and bank earnings.

To do this, we interact sequentially each macroeconomic variable with the earning variable in the GMM estimations of section 4.1 and also incorporated them as explanatory variables in the OLS estimations of section 4.2. Nevertheless, as these variables did not have significant coefficients and reduced degrees of freedom, particularly in the OLS estimations, they have been excluded from the results we present here.

Finally, we use a non-parametric test (Mann-Whitney test) to analyze if the bank income smoothing is different across countries depending on the value of each regulatory and institutional variable. Countries were classified in two groups depending on they had a value higher or lower than the median Results confirm the main findings of the multivariate analysis because lower income smoothing is observed in countries with higher investor protection, accounting disclosure, private supervision and financial development.

4. Conclusions

This paper analyzes bank income smoothing by managing loan loss provisions in 41 countries using a panel database and applying the GMM difference estimator to control for the unobservable heterogeneity and the potential endogeneity of bank variables affecting loan loss provisions. Results indicate that neither income smoothing nor differences in income smoothing between publicly and non-publicly traded banks are stable across countries.

The study reveals that the root causes of differences in the pattern of income smoothing across countries are many and varied. When we sequentially incorporate potential country determinants into the GMM difference estimations, our results are consistent with Leuz et al. (2003), i.e., investor protection and legal enforcement reduce incentives to smooth earnings in banks. However, we also point out that incentives to smooth earnings fall in line with accounting disclosure, restrictions on bank activities and official and private supervision; in contrast, they increase in line with market orientation and development of the financial system.

Using country-level data in a two-stage procedure confirms the relevance of restrictions on bank activities and private supervision, whilst the other country variables do not prove to be significant. This result indicates that specific banking regulation will reduce risk taking and also affects banks' incentives to smooth earnings. Thus, stringent restrictions on bank activities that reduce opportunities to run risks in non-traditional bank activities is consistent with a reduction in the benefits of managing earnings reports to reduce a volatility which is in itself low. On the other hand, the negative influence of private supervision confirms that enhancing market discipline, Pillar 3 of the new Basel Accord does, reduces not only bank risk but also incentives to smooth earnings, as well as improving the reliability of bank financial statements. To sum up, apart from the relevance of investor protection, which Leuz et al. (2003) uncovered in commercial and industrial firms, this paper highlights the relevance of national characteristics of regulation and supervision in banking in an explanation of differences across countries in bank income smoothing.

Table 1
Summary statistics

Panel A reports the descriptive statistics. The bank sample is made up of 1,586 banks from 41 countries. All data are obtained in real US dollar prices and on an annual basis over the 1995-2005 period. LLP is the loan loss provision, EBT is earnings before taxes and loan loss provision, CLOANS is the change of total loans outstanding estimated as the difference of total bank loans between year t and year t-1, LLA is the beginning balance of the total allowance for loan losses. All these variables are normalized by the total bank assets at the beginning of year t ($A_{i,t-1}$). CAP is bank capital divided by risk-weighted assets. *GDPGR* is the growth of real per capita GDP in the bank's country. Panel B reports the correlation matrix. *** and ** represent significance at the 1% and 5% level, respectively.

Panel A: Descriptive statistics

Country	Median LLP	Median EBT	Median CLOANS	Median LLA	Median CAP	Median GDPGR	# observations	# banks
Argentina	0.014	0.014	-0.002	0.028	0.241	0.240	158	58
Australia	0.133	0.074	0.008	0.001	0.013	6.662	87	26
Brazil	0.007	0.035	0.002	0.017	0.248	8.972	289	103
Canada	0.002	0.005	0.038	0.006	0.131	5.478	23	10
Chile	0.006	0.022	0.028	0.013	0.142	5.580	68	23
Colombia	0.014	0.023	-0.002	0.020	0.164	7.888	71	23
Denmark	0.003	0.013	0.031	0.019	0.064	3.474	66	38
Ecuador	0.013	0.024	-0.125	0.062	0.169	1.739	22	21
Egypt	0.009	0.025	0.026	0.062	0.141	7.028	97	27
France	0.003	0.012	0.025	0.028	0.080	4.040	340	117
Germany	0.003	0.006	-0.004	0.015	0.051	2.019	15	6
Greece	0.005	0.011	0.0*93	0.013	0.150	7.722	30	10
Hong Kong	0.004	0.019	0.002	0.012	0.217	-0.699	115	33
Ireland	0.001	0.015	0.053	0.007	0.066	14.637	33	11
Israel	0.004	0.012	0.047	0.019	0.075	14.637	47	13
Italy	0.040	0.015	0.054	0.016	0.108	4.539	251	90
Japan	0.003	0.004	-0.006	0.018	0.080	-0.551	115	102
Jordan	0.008	0.017	0.032	0.027	0.135	4.075	13	5
Kenya	0.013	0.0034	-0.038	0.032	0.265	7.414	57	25
Korea	0.011	0.015	0.045	0.021	0.048	8.123	44	16
Malaysia	0.010	0.025	0.020	0.026	0.118	6.186	104	34
Mexico	0.005	0.015	0.017	0.017	0.190	6.140	72	29
New Zealand	0.001	0.018	0.088	0.003	0.052	5.140	26	7
Nigeria	0.015	0.062	0.085	0.044	0.278	15.307	88	34
Norway	0.003	0.013	0.066	0.014	0.074	3.915	35	10
Pakistan	0.004	0.021	0.119	0.024	0.111	8.550	74	21
Peru	0.018	0.026	0.068	0.037	0.125	5.875	50	18

Philippines	0.010	0.017	-0.009	0.030	0.118	11.045	72	22
Portugal	0.004	0.013	0.088	0.010	0.083	6.957	63	22
Singapore	0.002	0.016	0.027	0.038	0.170	2.407	27	11
South Africa	0.009	0.026	0.024	0.023	0.190	10.685	42	13
Spain	0.003	0.015	0.052	.012	0.098	7.016	59	19
Sri Lanka	0.009	0.016	0.031	0.022	0.096	11.776	19	7
Sweden	0.0001	0.009	0.0020	0.005	0.047	4.426	23	7
Switzerland	0.001	0.014	0.016	0.001	0.187	2.316	215	84
Thailand	0.008	0.004	-0.031	0.061	0.060	4.201	25	10
Turkey	0.003	0.026	0.004	0.010	0.154	81.110	12	10
United Kingdom	0.002	0.013	0.029	0.008	0.184	5.085	239	80
Uruguay	0.008	0.022	0.097	0.009	0.097	2.481	13	7
USA	0.003	0.022	0.040	0.009	0.095	3.604	1325	373
Venezuela	0.014	0.038	0.041	0.028	0.148	21.084	22	11
Mean	0.011	0.026	0.073	0.028	0.243	5.988		
Median	0.004	0.019	0.029	0.013	0.111	5.280		
Standard Deviation	0.045	0.060	0.812	0.185	1.013	8.366		

Panel B: Correlations

VARIABLES	LLP	EBT	CLOANS	LLA	CAP
LLP	1				
EBT	0.528***	1			
CLOANS	0.533***	0.433***	1		
LLA	0.513***	0.281	-0.028**	1	
CAP	-0.0226	-0.016	-0.030**	-0.014	1
GDPGR	0.022	-0.001	-0.011	0.024	-0.001

Table 2
Income smoothing in the whole sample

Regressions are estimated using the Arellano and Bond (1991) GMM difference estimator for panel data with lagged dependent variables. A dependent variable is the ratio of loan loss provisions over lagged total assets. As explanatory variables we include two lags of the dependent variable, bank-specific fixed effects, year and country dummies. EBT is the profit before taxes and loan loss provision over lagged total assets. CLOANS is the change in the total loans outstanding over lagged total assets. LLA is the beginning balance of the total allowance for loan loss over lagged total assets. CAP is the bank capital over risk-weighted assets. GDP growth is the real growth in GDP. PT is a dummy variable that takes the value of one for publicly traded banks and zero otherwise. The regressions are estimated for the period 1995-2002 for the whole sample of countries and omitting US banks. Year and country dummy variables were included for all the estimations but are not reported. T-statistics are between brackets. ***, **, and * represent significance at the 1%, 5% and 10% level, respectively.

		Income Smoothing hypothesis		Differences between publicly and non-publicly traded banks	
	Predicted sign	Whole sample	Without USA	Whole sample	Without USA
		(1)	(2)	(3)	(4)
LLPt-1	+	0.0233*** (13.71)	0.0257*** (6.72)	0.0235*** (15.41)	0.0290*** (8.62)
LLPt-2	+	0.0123*** (13.53)	0.0393*** (11.33)	0.0124*** (15.10)	0.0405*** (13.57)
EBT	+	0.2534*** (13.52)	0.1105*** (7.01)	0.2571*** (15.52)	0.1041*** (6.82)
PTxEBT				-0.2054*** (-3.16)	-0.0300 (-0.54)
CLOANS	+	0.0240*** (13.82)	0.0190*** (10.64)	0.0229*** (14.97)	0.0195*** (11.90)
LLA	+	0.0557*** (4.22)	0.0552*** (7.16)	0.0640*** (5.32)	0.0572*** (9.92)
CAP	+/-	-0.0016*** (-2.63)	0.0009** (2.43)	-0.0014** (-2.53)	0.0006** (2.12)
GDPGR	-	-0.0002 (-1.30)	-0.0002* (-1.66)	-0.0002** (-1.96)	-0.0002** (-2.69)
Year dummies		Yes	Yes	Yes	Yes
Country dummies		Yes	Yes	Yes	Yes
m_1		-2.94***	-2.20**	-2.92***	-2.20**
m_2		1.38	0.80	1.38	0.79
Sargan Test		93.03	110.08	115.28	128.18
# observations		4546	3221	4546	3221
# banks		1586	1213	1586	1213
# countries		41	40	41	40

Table 3
Income smoothing across countries

The measure of income smoothing across countries is shown in column 1 and is obtained using the Arellano and Bond (1991) GMM difference estimator for panel data with lagged dependent variables. In each country regression, the dependent variable is the ratio of loan loss provisions over lagged total assets. As explanatory variables, we include two lags of the dependent variable, profit before taxes and loan loss provision over lagged total assets (EBT), the change in the total loans outstanding over lagged total assets (CLOANS), the beginning balance of the total allowance for loan loss over lagged total assets (LLA), bank capital over risk-weighted assets, real growth in GDP, bank-specific fixed effects and year country dummies. The coefficient of EBT is the measure of income smoothing. Column 2 shows the coefficients of the interaction variable PTxEBT when this variable is added to the regression in column 1; it captures the difference in the income smoothing with loan loss provision between publicly and non-publicly traded banks. PT is a dummy variable that takes the value of one for publicly traded banks and zero otherwise. The regressions are estimated for each country for the period 1995-2002. Year dummy variables were included for all the estimations but are not reported. T-statistics are between brackets. ***, **, and * represent the significance at the 1%, 5% and 10% level, respectively.

	Income smoothing	Sargan test	Difference between publicly and non-publicly traded banks	Sargan test	# observations	# banks
	(1)		(2)			
Argentina	0.0329 (1.19)	49.69	0.1732 (0.96)	47.47	158	58
Australia	-0.0737 (-0.95)	97.60	0.0845 (0.34)	96.83	87	26
Brazil	0.1018*** (3.25)	90.10	0.1374 (0.74)	91.61	289	103
Canada	-0.7191 (-0.95)	10.19	---	---	23	10
Chile	0.0516 (1.00)	58.23	0.5809** (2.01)	55.96	68	23
Colombia	-0.6804*** (-8.82)	60.78	0.8094*** (3.86)	58.59	71	23
Denmark	0.6138*** (4.47)	44.96	-0.5082 (-1.59)	57.13	66	38
Ecuador	0.0298 (0.11)	0.94	0.1793 (0.15)	1.04	22	21
Egypt	0.4347*** (6.58)	19.80	0.5585*** (4.79)	100.13	97	27
France	-0.0319 (-0.75)	123.05**	-1.0122 (-0.81)	125.41	340	117
Germany	-0.4901 (-1.45)	3.48	-0.0189 (-0.04)	2.29	15	6
Greece	0.0386 (0.32)	21.51	-0.3069*** (-4.17)	30.45	30	10
Hong Kong	0.0775 (1.38)	75.27	-0.6601 (-1.46)	82.34	115	33
Ireland	0.0550 (1.02)	22.65	0.0935 (0.81)	22.96	33	11
Israel	-0.1140 (-1.32)	45.15	0.0653 (0.31)	44.06	47	13
Italy	0.0640** (2.12)	79.43	-0.1168** (-1.92)	72.99	251	90
Japan	0.1322 (0.94)	31.31	0.1648 (0.72)	33.22	115	102
Jordan	-0.3056 (-0.69)	2.20	4.6113 (0.88)	1.88	13	5
Kenya	-0.1750 (-1.21)	47.03	0.5725* (1.79)	54.88	57	25
Korea	0.2582*** (2.82)	32.42	---	---	44	16
Malaysia	-0.3122** (-2.14)	81.17	0.2899 (0.35)	81.35	104	34

Mexico	-0.0346 (-0.89)	49.69	0.1182 (1.49)	51.02	72	29
New Zealand	0.3077 (1.22)	21.27	---	---	26	7
Nigeria	0.0482 (0.85)	74.53	-0.0880 (-0.91)	75.44	88	34
Norway	-0.3103 (-1.18)	25.75	-0.5696 (-0.57)	25.08	35	10
Pakistan	-0.1840** (-2.46)	53.54	0.0655 (0.44)	52.78	74	21
Peru	0.6300*** (4.72)	36.62	0.3074* (1.68)	37.72	50	18
Philippines	0.5237*** (5.46)	55.61	0.1924 (1.59)	53.48	72	22
Portugal	0.0675** (2.57)	68.63	0.2635** (2.00)	67.98	63	22
Singapore	0.4835 (1.47)	14.07	0.1029 (0.15)	13.08	27	11
South Africa	-0.1439 (-0.64)	32.32	-0.1724 (-0.24)	31.12	42	13
Spain	0.0250 (0.66)	47.40	0.1738** (2.20)	48.07	59	19
Sri Lanka	0.1677 (0.83)	7.70	-0.4641 (-0.56)	6.52	19	7
Sweden	0.3861* (1.72)	9.00	-0.1061 (-0.21)	8.29	23	7
Switzerland	-0.0032 (-0.38)	70.68	0.1368 (1.61)	76.35	215	84
Thailand	-2.4646** (-2.54)	14.30	3.4513*** (2.94)	13.39	25	10
Turkey	-0.3092 (-1.22)	3.52	---	---	12	10
United Kingdom	-0.1734*** (-3.56)	74.91	0.2787 (0.88)	70.47	239	80
Uruguay	0.3966 (0.60)	2.31	---	---	13	7
USA	0.4313*** (30.60)	148.18***	-0.7075*** (-5.00)	157.12***	1325	373
Venezuela	0.4446*** (3.99)	11.88	0.3015 (1.46)	9.18	22	11

Table 4
Means and correlations of country variables

Panel A: Means of country variables

Country	ANTIDIRECTOR	CREDITOR S	LEGAL	DISCLOSURE	RESTRICT	OFFICIAL	MONITOR	STRUCT	FINAN
Argentina	4	1	5,787	45	11	8	5	-0,953	-2,964
Australia	4	1	9,300	75	11	10	6	-0,332	-0,364
Brazil	3	1	6,520	54	8	13	5	-0,348	-1,688
Canada	5	1	9,580	74	7	10	6	-0,005	-0,684
Chile	5	2	6,770	52	13	11	4	-0,640	-1,207
Colombia	3	0	5,660	50	13	13	4	-1,642	-3,260
Denmark	2	3	9,800	62	10	9	5	-0,189	-1,094
Ecuador	2	4	6,032	N.A.	14	14	4	-2,717	-3,740
Egypt	2	4	4,845	24	10	14	5	-1,344	-2,104
France	3	0	8,970	69	6	7	5	-0,721	-0,445
Germany	1	3	9,370	62	7	9	6	-1,113	-0,270
Greece	2	1	6,815	55	10	12	4	-0,306	-1,386
Hong Kong	5	4	8,770	69	6	11	6	0,202	1,096
Ireland	4	1	8,740	N.A.	7	11	6	-0,788	-0,649
Israel	3	4	7,717	64	13	7	5	-1,029	-1,060
Italy	1	2	7,950	62	10	7	6	-0,839	-1,004
Japan	4	2	9,370	65	11	12	6	-0,898	-0,039
Jordan	1	N.A.	6,162	N.A.	9	14	4	-1,102	-1,330
Kenya	3	4	5,329	N.A.	9	13	5	-2,042	-3,517
Malaysia	4	4	7,710	76	11	11	5	0,306	0,582
Mexico	1	0	5,990	60	10	8	6	-0,179	-3,609
New Zealand	4	3	9,800	70	4	7	6	-1,295	-1,293
Nigeria	3	4	4,340	59	12	13	4	-2,168	-4,981
Norway	4	2	9,760	74	7	9	6	-0,766	-1,499
Pakistan	5	4	3,670	N.A.	12	13	4	-0,511	-2,096
Peru	3	0	4,830	38	7	12	4	-0,746	-2,792
Philippines	3	0	4,080	65	7	11	5	-0,212	-1,275
Portugal	3	1	7,810	36	10	14	5	-1,364	-0,884
Singapore	4	4	8,990	78	10	13	6	0,120	0,407
South Africa	5	3	6,442	70	8	6	5	0,105	-0,447
South Korea	2	3	6,710	62	N.A.	12	6	-0,192	-0,438
Spain	4	2	7,870	64	6	9	5	-0,432	-0,231
Sri Lanka	3	3	4,633	N.A.	12	7	5	-1,742	-3,315
Sweden	3	2	9,920	83	8	8	4	0,784	0,252
Switzerland	2	1	9,990	68	7	14	5	0,012	1,103
Thailand	2	3	5,930	64	12	10	6	-1,043	-0,386
Turkey	2	2	5,460	51	8	14	5	-0,095	-2,107
United Kingdom	5	4	9,400	78	5	11	6	-0,063	0,476

Uruguay	2	2	5,500	31	6	12	5	-5,453	-7,853
USA	5	1	9,520	71	11	13	5	0,622	0,647
Venezuela	1	N.A.	6,150	40	9	11	3	-1,574	-4,305

Panel B: Correlations

	ANTIDIRECTOR	CREDITORS	LEGAL	DISCLOSURE	RESTRICT	OFFICIAL	MONITOR	STRUCT	FINAN
ANTIDIRECTOR	1								
CREDITORS	0.114	1							
LEGAL	0.246	-0.052	1						
DISCLOSURE	0.435***	0.193	0.665***	1					
RESTRICT	-0.087	0.184	-0.368**	-0.160	1				
OFFICIAL	-0.098	0.056	-0.276	-0.396**	0.182	1			
MONITOR	0.184	0.070	0.498***	0.444***	-0.344**	-0.307	1		
STRUCT	0.340**	-0.128	0.416***	0.627***	-0.109	-0.158	0.212	1	
FINAN	0.370**	0.038	0.663***	0.678***	-0.189	-0.130	0.425***	0.821***	1

*** Significant at 1 % level. ** Significant at 5 % level.

Table 5
Bank income smoothing and investor protection variables

Regressions are estimated using the Arellano and Bond (1991) GMM difference estimator for panel data with lagged dependent variables. A dependent variable is the ratio of loan loss provisions over lagged total assets. As explanatory variables, we include two lags of the dependent variable, bank-specific fixed effects, year and country dummies. EBT is profit before taxes and loan loss provision over lagged total assets. CLOANS is the change in the total loans outstanding over lagged total assets. LLA is the beginning balance of the total allowance for loan loss over lagged total assets. CAP is bank capital over risk-weighted assets. GDP growth is real growth in GDP. LEGAL is the measure of legal enforcement. ANTIDIRECTOR measures the protection of minority shareholders and CREDITORS measures creditor rights. Regressions are estimated for the 1995-2002 period, omitting USA banks from the whole sample of countries. Year and country dummy variables were included for all the estimations but are not reported. T-statistics are between brackets. ***, **, and * represent the significance at the 1%, 5% and 10% level, respectively.

	Predicted sign	(1)	(2)	(3)	(4)	(5)
LLPt-1	+	0.0139*** (2.74)	0.0121** (2.34)	0.0159*** (3.23)	0.0158*** (3.19)	0.0187*** (3.93)
LLPt-2	+	0.0382*** (9.40)	0.0371*** (9.08)	0.0382*** (9.71)	0.0391*** (9.80)	0.0399*** (10.36)
EBT	+	0.0548*** (4.91)	0.0589*** (5.57)	0.0602*** (4.65)	0.0496*** (4.75)	0.0523*** (4.15)
CAP	+/-	0.0014*** (3.15)	0.0015*** (3.32)	0.0020*** (4.33)	0.0017*** (3.71)	0.0022*** (4.81)
CLOANS	+	0.0187*** (11.00)	0.0190*** (11.24)	0.0196*** (11.14)	0.0192*** (11.26)	0.0196*** (11.07)
LLA	+	0.0422*** (4.20)	0.0432*** (4.37)	0.0417*** (4.13)	0.0415*** (4.11)	0.0394*** (3.76)
GDPGR	-	-0.0001** (-1.96)	-0.0001* (-1.78)	-0.0001 (-1.31)	-0.0001* (-1.74)	-0.0001 (-1.29)
LEGAL		0.0003*** (3.89)			0.0002 (0.28)	0.0005** (2.13)
EBT*LEGAL	-	-0.0054*** (-3.51)				
ANTIDIRECTOR			0.0007*** (3.99)		0.0006** (2.14)	
EBT*ANTIDIRECTOR	-		-0.0150*** (-4.00)			
CREDITOR				-0.0009 (-0.89)		-0.0006 (-0.86)
EBT*CREDITOR	-			-0.0182*** (-2.79)		
EBT*LEGAL*ANTIDIRECTOR	-				-0.0017*** (-3.23)	
EBT*LEGAL*CREDITOR	-					-0.0020** (-2.15)
Year dummies		Yes	Yes	Yes	Yes	Yes
Country dummies		Yes	Yes	Yes	Yes	Yes
m_1		-2.13**	-2.13**	-2.14 **	-2.14**	-2.14**
m_2		0.74	0.75	0.75	0.73	0.74
Sargan Test		113.04	112.16	111.80	111.83	112.14
# observations		3221	3221	3186	3221	3186
# banks		1213	1213	1197	1213	1197
# countries		40	40	38	40	38

Table 6
Bank income smoothing and regulation and supervision

Regressions are estimated using the Arellano and Bond (1991) GMM difference estimator for panel data with lagged dependent variables. A dependent variable is the ratio of loan loss provisions over lagged total assets. As explanatory variables, we include two lags of the dependent variable, bank-specific fixed effects, year and country dummies. EBT is profit before taxes and loan loss provision over lagged total assets. CLOANS is the change in the total loans outstanding over lagged total assets. LLA is the beginning balance of the total allowance for loan loss over lagged total assets. CAP is bank capital over risk-weighted assets. GDP growth is real growth in GDP. DISCLOSURE is the accounting disclosure index from La Porta et al. (1998). RESTRICT is the measure of regulatory restrictions on bank activities, OFFICIAL measures the power of official bank supervision. MONITOR is an index of private bank monitoring. STRUCT measures the market-orientation of the financial system. FINAN measures the country's financial development. The regressions are estimated for the period 1995-2002, omitting USA banks from the whole sample of countries. Year and country dummy variables were included for all the estimations but are not reported. T-statistics are between brackets. ***, **,and * represent the significance at the 1%, 5% and 10% level, respectively.

	Predicted sign	(1)	(2)	(3)	(4)	(5)	(6)
LLPt-1	-	0.0128**	0.0074	0.0093*	0.0116**	0.0040	-0.0030
		(2.51)	(1.40)	(1.78)	(2.24)	(0.76)	(-0.57)
LLPt-2	+	0.0375***	0.0345***	0.0355***	0.0369***	0.0329***	0.0289***
		(9.22)	(8.34)	(8.66)	(8.99)	(8.01)	(7.08)
EBT	+	0.0573***	0.0708***	0.0654***	0.0609***	0.0910***	0.1083***
		(5.34)	(6.64)	(6.07)	(5.56)	(7.16)	(8.76)
CAP	+/-	0.0015***	0.0010**	0.0012***	0.0013***	0.0007*	0.0004
		(3.24)	(2.36)	(2.75)	(2.96)	(1.88)	(1.44)
CLOANS	+	0.0189***	0.0189***	0.0190***	0.0187***	0.0188***	0.0196***
		(11.19)	(11.52)	(11.46)	(11.15)	(11.02)	(11.63)
LLA	+	0.0427***	0.0482***	0.0468***	0.0436***	0.0536***	0.0641***
		(4.29)	(5.03)	(4.81)	(4.41)	(5.74)	(7.29)
GDPGR	-	-0.0001*	-0.0001***	-0.0001*	-0.0001*	-0.0002**	-0.0002**
		(-1.84	(-1.89)	(-1.73)	(-1.90)	(-2.38)	(-2.42)
DISCLOSURE		0.00004***					
		(3.85)					
EBT*DISCLOSURE	-	-0.0007***					
		(-3.78)					
RESTRICT			0.0004***				
			(3.56)				
EBT*RESTRICT	+/-		-0.0058***				
			(-4.92)				
OFFICIAL				0.0003***			
				(3.55)			
EBT*OFFICIAL	-			-0.0045***			
				(-4.52)			
MONITOR					0.0005***		
					(3.82)		
EBT*MONITOR	-				-0.0085**		
					(-4.01)		
STRUCT						-0.0008*	
						(-0.77)	
EBT*STRUCT	+/-					0.0732***	
						(6.27)	
FINAN							0.0008*
							(-1.80)
EBT*FINAN	+/-						0.4653***
							(7.95)
Year dummies		Yes	Yes	Yes	Yes	Yes	Yes
Country dummies		Yes	Yes	Yes	Yes	Yes	Yes
m_1		-2.13**	-2.13**	-2.13***	-2.13***	-2.12**	-2.12**
m_2		0.74	0.77	0.76	0.75	0.78	0.83
Sargan Test		112.76	112.68	112.69	113.17	114.92	110.41
# observations		3003	3177	3221	3221	3221	3221
# banks		1123	1197	1213	1213	1213	1213
# countries		34	39	40	40	40	40

Table 7
Cross-country determinants of bank income smoothing. OLS results

Results of OLS estimations. The dependent variable is the measure of income smoothing for each country, i.e., the coefficient obtained for the earning variable in a separate estimation of model (1) in each country. The independent variables are the characteristics of institutions, accounting disclosure, regulation, supervision, financial structure and financial development in each country. The definition of each independent variable is provided in the appendix. T-statistics are between brackets. ***, **, and * represent significance at the 1%, 5% and 10% level, respectively.

	Predicted sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
CONSTANT		-0.0464 (-0129)	0.3015 (0.67)	1.7210** (2.02)	1.7351* (2.00)	1.6120* (1.79)	2.2449* (2.03)	1.7951* (1.71)	1.9673* (1.68)	1.6943 (1.64)
DISCLOSURE	-		-0.0081 (-1.05)				-0.0072 (-0.73)		-0.0051 (-0.58)	
LEGAL	-	0.0022 (0.05)								0.0344 (0.66)
CREDITOR	-	-0.0301 (-0.49)	-0.0194 (-0.27)					-0.0040 (-0.06)	0.0084 (0.11)	-0.0008 (-0.01)
ANTIDIRECTOR	-	0.0232 (0.32)	0.0662 (0.78)					0.0205 (0.27)	0.0535 (0.61)	0.0133 (0.19)
RESTRICT	+/-			-0.0637* (-1.90)	-0.0635* (-1.87)	-0.0644* (-1.90)	-0.0757* (-1.92)	-0.0670* (-1.79)	-0.0733* (-1.77)	-0.0627* (-1.66)
OFFICIAL	-			-0.0026 (-0.08)	-0.0020 (-0.06)	-0.0026 (-0.08)	0.0050 (0.12)	0.0036 (0.10)	0.0048 (0.11)	0.0054 (0.15)
MONITOR	-			-0.2243** (-2.10)	-0.2267** (-2.07)	-0.2071* (-1.78)	-0.2236* (-1.69)	-0.2537* (-1.92)	-0.2450 (-1.58)	-0.2922** (-2.04)
STRUCT	+/-				0.0122 (0.16)		0.0827 (0.73)	0.0040 (0.05)		
FINAN	+/-					-0.0191 (-0.40)				
R^2		0.0092	0.0452	0.1479	0.1485	0.1518	0.2111	0.1555	0.1921	0.1671
F		0.11	0.47	2.08	1.53	1.57	1.50	0.95	1.03	1.04
AdjR^2		-0.0757	-0.0503	0.0769	0.0512	0.0548	0.0702	-0.0079	0.0056	0.0058
# of countries		39	34	40	40	40	34	38	33	38

Appendix A. Description and sources of country variables

Variable	*Description and source*
ANTIDIRECTOR	It is formed by adding one when: 1) the country allows shareholders to mail their proxy vote, 2) shareholders are not required to deposit their shares prior to the General Shareholders' Meeting, 3) cumulative voting or proportional representation of minorities on the board of directors is allowed, 4) an oppressed minorities mechanism is in place, 5) the minimum percentage of share capital that entitles a shareholders to call for an Extraordinary Shareholders' Meeting is less than or equal to 10 percent (the sample median), or 6) when shareholders have preemptive rights that can only be waived by a shareholders meeting. The index ranges from zero to six with a higher value indicating stronger minority shareholders protection. Source: La Porta et al. (1998).
CREDITORS	This index is equal to the sum of the scores (0 to 1) for five categories: no automatic stay on assets, secured creditors paid first, restrictions for going into organization, management does not stay in control during reorganization, and legal reserve required as percent of capital. This index thus ranges from 0 to 5, with a higher value indicating stronger creditor rights or stronger protection against borrower expropriation. Source: La Porta et al. (1998).
LEGAL	This index is measured as the mean score across three legal variables used in La Porta et al. (1998): (1) the efficiency of the judicial system, (2) the index of rule of law, and (3) the corruption index. All three variables range from zero to ten, with a higher average score indicating stronger legal enforcement.
ACCOUNT	Index created by examining and rating companies' 1990 annual reports on their inclusion or omission of 90 items. These items fall into seven categories (general information, income statements, balance sheets, funds flow statement, accounting standards, stock data, and special items). A minimum of three companies in each country was studied. The companies represent a cross-section of various industry groups; industrial companies represented 70%, and financial companies represented the remaining 30%. Source: International accounting and auditing trends, Center for International Financial Analysis and Research, La Porta et al. (1998).
RESTRICT	A measure of a bank's ability to engage in non-traditional bank activities (including securities, insurance, real estate, and bank ownership and control of non-financial firms). This variable ranges from 4 to 16 with higher scores indicating more restrictions on banks to engage in such activities. Source: Barth et al. (2001).
OFFICIAL	Index of official supervisory power. Adds one for an affirmative response to each for the following 14 questions: 1. Does the supervisory agency have the right to meet with external auditors to discuss their report without the approval of the bank? 2. Are auditors required by law to communicate directly to the supervisory agency any presumed involvement of bank directors or senior managers in elicit activities, fraud or insider abuse? 3. Can supervisors take legal actions against external auditors for negligence 4. Can the supervisory authority force a bank to change its internal organizational structure? 5. Are off-balance sheet items disclosed to supervisors? 6. Can the supervisory agency order the bank's directors or management to constitute provisions to cover actual or potential losses? 7. Can the supervisory agency suspend the directors' decision to distribute: a) Dividends? b) Bonuses? c) Management fees? 8. Can the supervisory agency legally declare-such that this declaration supersedes the rights of bank shareholders - that a bank is insolvent? 9. Does the Banking Law give authority to the supervisory agency to intervene, that is, suspend some or all ownership rights-a problem bank? 10. Regarding bank restructuring and reorganization, can the supervisory agency or any other government agency do the following: a) Supersede shareholder rights? b) Remove and replace management? c) Remove and replace directors? Source: Barth et al. (2001).
MONITOR	This variable increases by a value of one for each of the following characteristics for a country: 1) if an outside licensed audit is required of the financial statements issued by banks; such an audit would presumably indicate the presence or absence of an independent assessment of the accuracy

	of financial information released to the public; 2) if the income statement includes accrued or unpaid interest or principal on non-performing loans and when banks are required to produce consolidated financial statements; 3) if off-balance sheet items are disclosed to the public; 4) if banks must disclose risk management procedures to the public; 5) if subordinated debt is allowable (required) as a part of regulatory capital, and finally 6) the percentage of the top 10 banks that are rated by international credit-rating agencies (the greater the percentage, the more the public may be aware of the overall condition of the banking industry as viewed by an independent third party). This variable therefore ranges from 0 to 6, with higher values indicating greater private oversight. Source: Barth et al. (2001).
STRUCT	The first principal component of two variables that measure the comparative activity and size of markets and banks. Each of the underlying components is constructed so that higher values indicate more market-based financial systems. The first component (STRUCT–ACTIV) is the natural logarithm of the ratio of value traded to bank credit. Value traded equals the value of stock transactions as a share of national output. Bank credit equals the claims of the banking sector on the private sector as a share of GDP. The second component (STRUCT-SIZE) equals the natural logarithm of the ratio of market capitalization to bank credit. Market capitalization is defined as the value-listed shares divided by GDP, and is a measure of the size of stock markets relative to the economy. Annual data over the 1995-2002 period. Source: Beck, Demirgüc-Kunt and Levine (2003).
FINAN	The first principal component of two underlying measures of financial development. The first (FINAN-ACTIV) is a measure of the overall activity of financial intermediaries and markets. It equals the natural logarithm of the product of private credit (the value of credits by financial intermediaries to the private sector divided by GDP) and value traded (the value of total shares traded on the stock market exchange divided by GDP). Private credit includes credits by both bank and non-bank intermediaries. The second (FINAN-SIZE) is a measure of the overall size of the financial sector and equals the natural logarithm of the sum of private credit and market capitalization. Annual data over the 1995-2002 period. Source: Beck, Demirgüc-Kunt and Levine (2003).

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